PERIODICAL ROOM
GENERAL LIBRARY
Univ. Of Mich.

JUL 26 1927

THE JOURNAL OF PHILOSOPHY

VOL. XXIV. NO. 15: JULY 21, 1927

CONTENTS

The Rôle of Dogma in Philosophy: W. H. SHELDON..... 393

A Phenomenological Interpretation of Physico-Chemical Configurations and Conscious Structures (II): OLIVER L. REISER. 404

Book Reviews:

Ritter's The Natural History of our Conduct: DANIEL SOMMER ROBINSON 415

Bridges' Aspects of Ethical Religion: M. C. OTTO..... 417

Journals and New Books..... 418

Notes and News..... 420

PUBLISHED FORTNIGHTLY
BY THE
JOURNAL OF PHILOSOPHY, INC.

THE JOURNAL OF PHILOSOPHY

All communications to the Editors should be addressed to Professor FREDERICK J. E. WOODBRIDGE, or Professor WENDELL T. BUSH, or Professor HERBERT W. SCHNEIDER, Columbia University, New York.

Subscriptions and advertisements should be sent to THE JOURNAL OF PHILOSOPHY, 515 West 116th Street, New York. The annual subscription price (twenty-six numbers) is $4.00 and the charge for single numbers is 20 cents. Advertising rates will be forwarded on application.

THE JOURNAL OF PHILOSOPHY is owned by The Journal of Philosophy, Inc., 515 West 116th Street, New York, and published at Lancaster, Pa.: President, Wendell T. Bush; Vice-President, Herbert W. Schneider; Treasurer, Frederick J. E. Woodbridge; Secretary, Iris W. Wilder.

Entered as second class matter, March 18, 1921, at the Post Office at Lancaster, Pa., under Act of Congress of March 3, 1879.

THE MONIST

A QUARTERLY MAGAZINE

Devoted to the Philosophy of Science

Founded by EDWARD C. HEGELER

The Philosophy of Science is an application of the scientific method to philosophy. It is a systematization of positive facts: it takes experience as its foundation, and uses the formal relations of experience (mathematics, logic, etc.) as its method. All truths form one consistent system and any dualism of irreconcilable statements indicates a problem arising from either faulty reasoning or an insufficient knowledge of facts. Science always implies Monism, i. e., a unitary world-conception.

In the U. S., Canada and Mexico, yearly, postpaid, $3.00; foreign postage, 25 cents additional; single copies, 85 cents.

SEND FOR COMPLETE CATALOG

The Open Court Publishing Co.

122 South Michigan Avenue, Chicago, Illinois

Vol. XXIV, No. 15. July 21, 1927

THE JOURNAL OF PHILOSOPHY

THE RÔLE OF DOGMA IN PHILOSOPHY

TWO motives incite men to metaphysics. The one is contemplative: a curiosity which leads a man to seek a well-ordered scheme of the facts about him. The other motive is the hope of discovering some principle or being that may ensure his lasting good. Not superficially but deeply practical is this motive; often a man neglects bodily comfort, material needs, social tasks and pleasures, to gain the assurance of such a principle. It is to this second motive that metaphysics owes that affinity with religion which has been so evident in the great systems. History shows, indeed, scarcely a system of the first magnitude whose author has not striven to demonstrate the being of God and the truth of immortality. Such is the power of the practical motive, greater even than that of the contemplative. It is a hope and a preconceived idea that here furnishes the impulse; the thinker is not looking in general to see what may turn up, but is looking for a definite object.

But if this is the case with the practical, it is not less so with the theoretical motive. No one would survey the whole realm of reality for the mere pleasure of looking at facts. If such an occupation gave satisfaction, there would be no stimulus to reflection, analysis or inference. But the devotee of pure contemplation has rather a hope that the facts will be found to conform to an order, a logical scheme, a principle. He quite deliberately seeks such a scheme and principle; nay more, he has a prior belief that there is one and that it is of this or that precise nature. He bends all his powers to justify his belief in some particular conception that he has espoused; he is looking, not in general, but for some one explaining principle upon which he has set his mind and heart.

Let no one think, then, that the philosopher is, or ever can be, purely empirical or unbiassed. He is, on the contrary, deep down in his mind, a dogmatist. He must always look for something which he believes at the bottom of his heart that he will eventually find. To this something—be it a principle of explanation or a being who guarantees human salvation—is due all the significance and the interest which philosophy possesses for human mortals. If he did not have a persisting faith in this matter, the philosopher would lack sufficient motive for continuing his arduous task. And, in-

deed, he must have more than a general faith. He must have some image or concept, however dim, of the thing he is looking for; he could not otherwise find it, or even be sure of its absence. The condition of fruitful search is that we search *for something in particular,* and that means that we know what we are seeking. Who could find the face in the picture-puzzle unless he had already the idea of the face? Let not the metaphysician be ashamed to confess that he is looking for a personal God, whose ways explain the character of reality and whose nature is a warrant for man's hopes. Let him rather find glory in this bias; for if we must look for something, is it not best to look for the best that we can conceive? And is not such an entity the only one which meets both the contemplative and the practical want?

It is, then, the justifiable and proper aim of metaphysics to secure evidence of a supreme spirit, such as religion has stood for. But we find in the history of thought two quite distinct methods of pursuing this goal. One of these is natural, the other highly reflective; the former difficult, the latter a short cut. These methods are roughly what are known as realism and idealism. Realism has sought its evidence of a God and of human salvation in the make-up of external reality, physical or ideal. Idealism has shown relatively little interest in material nature or the objective principles of being; it takes the short cut to spirit either by turning inward, defining the external in terms of experience (which means human experience) and thereby making reality as spiritual as the mind of man, or by equating reality with reason and thus with mind. Realism was the method of the great Scholastic, St. Thomas; idealism that of Berkeley and the German idealists from Kant to Hegel. And I think there is no known alternative to these two methods.

Idealism is a short cut to spirit and to God, and as such is a spurious method. For idealism has in the end but two ways of proving its point. The one way is Berkeley's, broadened indeed by Kant and Fichte, but not altered in direction; the other way is that of Hegel. The Berkeleyan way consists in the defining of external reality in terms of the knower—as object for a subject. Such reality thereby becomes a function of the subject. And as the subject is mental or spiritual, the object takes on a mental or spiritual character. But, of course, this spirituality of the object is not in any way independent of the subject; rather it *is* the spirituality of the subject. Now the subject is, after all, man and nothing but man; and thus the material universe is simply made human. The Kantian improvement on Berkeley consisted only in the discovery of the universal element in human experience; viz., that common ego, transcending the private individual and manifested in the social

consciousness, whose experience constitutes objective reality. This larger or common ego is, after all, but the unison of us particular human beings, and we have not got a step beyond humanism; rather we have waded deeper into the humanistic pool. The God and the immortality which Kant permits us to accept are functions of our own moral experience; they hang upon that experience and are not the genuine God, Creator and Sustainer of the universe, or the genuine immortality of a future time. The like is true of Fichte, who reached his God and his external reality by the moral pathway. Both physical being and our fellow-minds are for Fichte the conditions, imposed by the moral activity of the human subject, of the development of that same activity—and they are nothing more. Never do we come by this path to that Creative Spirit and existing guarantee of salvation which was the original object of the metaphysical search. The outer world is for these idealists a function of one's moral consciousness; so are his fellows, and so his God. Their spirituality is their humanness; they vanish or flourish as man vanishes or flourishes.

These results of Kant and Fichte are, I willingly admit, true for their point of view. I do not think that any realist, or other partisan, can refute them. But I do not find in them that information which alone gives interest to philosophy. The short cut to spirit by the subjective human road gives us no more than a human spirit, whether small and private or large and social. Let those who are satisfied with a glorification of man rest in this truth; most men can not but seek a more objective, self-sufficient God. To these, He is no function of us; rather we of Him. And they will have to take up anew the philosophic quest.

There is the other way of idealism, the objective way of Hegel. The Hegelian argument at bottom is that all reality forms, and must form, a system, of which each element or aspect is organic to all the rest; a one-in-many of interpenetrating members whose unity in difference marks it as mind. This is quite other than the subjective or humanistic view of Hegel's predecessors. It is not properly humanistic at all. I do not say, however, that Hegel and his followers were passionately concerned with much besides human history and institutions. I do not think they were. But that is irrelevant to our issue, which is concerned alone with the kind of satisfaction Hegel offers—the kind of God and of salvation that he procures for us. And on this point we must confess that he, too, has used a short cut and a spurious method. The spirit which he discovers is the one-in-many system of all that is, and his revelation declares that whatever is, is one absolute mind. The God that he gets is the actual universe; not a Being who ensures a good ending

in time for all sentient creatures. *He* is good, or perhaps above the contrast of good and evil; but *our* question is not about that. Our question is: can we find a Being who will guard and guide all conscious beings to what they want, viz., a lasting happiness—whatever that may consist in? It is all a matter of what we are searching for. If we know that the absolute mind is real, we nevertheless have not got what we seek. We look for evidence of a Deity who can make all living things better off in the future, relieve us of the losses, defeats, despairs, and the thousand other evils which we can not help hoping to overcome. In the end our philosophy takes its supreme significance from this practical motive, and any result other than the satisfaction of this particular quest, no matter how true it is, will inevitably be put aside as irrelevant and trifling, and we shall begin the quest anew. And the search will go on until we either find what we look for, or prove definitely that it is not there.

Let not this criticism of idealism be misunderstood. The results of idealism may be admitted to be on the whole irrefutable. The idealist like the rest of us sought a principle of order and of salvation. He hoped to find it in the human mind or in the systematic structure that reason demands. And find it he did; but while he worked in the narrow circle of man's thinking process, that which he found could not be more than human. It could not be a higher power, still less a supreme power, controlling alike the courses of the stars and the destinies of animal life. The principle can not rise above its source. Even when he turned outward with Hegel, he was not looking at the content and detail of reality; that was too slow a method. He wanted a short cut and a key-formula. He seized upon the ideal of system—reason's ideal—saw that increasing knowledge moves toward that ideal, and with great skill arranged the categories in a hierarchy. On the whole his picture is as far as it goes *correct* enough. But it is not *good* enough; it is not what we started out to find. We have learned many things about mind from these idealists: far more (I think) than their realistic critics have taught us. But the principle of order, the key of the universe which they have delivered to us, is not the key that unlocks the particular door we want to unlock. Who shall forbid us to turn in a different direction, and look for a principle, a being, a person (highest known type of being) that is not only logical ground, but practical savior of all sentient creatures?

Outward we must turn: look at external reality we must; for if there is a supreme being, He is greater and better than man, and can not reside solely within man. The universe about us, even the physical universe, is immeasurably more powerful, more beautiful, more majestic, than all humanity—save only in this, that it lacks

the personal consciousness. But perhaps we may find evidence of such a consciousness in this great order that surrounds us.

On the whole modern philosophy has lost this outward-looking attitude. It is still largely of the idealistic sort, subjective and humanistic; even the Hegelian tends to revert to Berkeleyan thinking—as when, for instance, he declares that reality is experience. True, certain recent thinkers endeavor to leave this path and to consider the material world by itself, its structure and its laws; these are the realists of our time. But for the most part they have two fatal weaknesses. First, they claim to have refuted idealism—a claim whose injustice provokes the indignation of idealists and thus perpetuates an unenlightening controversy. Secondly, they have no bias, no preconceived idea of the best for which to look, which shall give some point to their investigations. Collating the results of physical science as they do, they therefore tend to become materialists. Herein they are inferior to the idealists, who at least had the courage to look for the best.

To regain the uncorrupted zeal of the metaphysical quest we must go back to the spirit of Scholasticism, and especially to its consummation, the system of Aquinas. The first chapter of this system is an investigation of the being and attributes of a personal God. The task that lies before us today is to appreciate critically that investigation of St. Thomas, as set forth in the first treatise—concerning God—of Part One of the *Summa Theologica;* to discern the truth and the error of it, to seek to fill the gaps if we find any, and to seek new proofs. No other chapter of metaphysics takes precedence of this one.

But other systems, too, have for their first chapter the being and attributes of God. Descartes practically opens his system in the *Meditations* with that topic; so does Spinoza in Book I of the *Ethics,* and Leibniz's first statement of his system in the *Discourse* begins with the argument for God's being. In what way is the Thomistic account to be preferred? In this alone: St. Thomas avowedly includes the motive of dogma. Dogma is a *sine qua non* of philosophy; we can not pursue metaphysical inquiry without faith in the reality of some preconceived notion, and to have faith is to accept dogma. Protestant-Christian philosophy needs to learn this lesson—and who has taught it better than the Doctor Angelicus? I do not say that we must agree wholly with the Thomistic treatment of dogma; in fact I think that that treatment makes an unnecessary and perhaps in the end ruinous breach between dogma and reason. But I do declare that reason can not proceed, nor life be lived, on a scale higher than the animal's, without dogma and without faith.

The outward-looking attitude is, in fact, essentially dogmatic, though more also; the only road, indeed, of escape from dogmatism is the subjective one of idealism. Kant saw this quite correctly, but what he did not see was that if we forego dogmatism we can go not one step beyond the confines of the human mind—a result intolerable to the metaphysical impulse of man himself.

How, then, does the Angelic Doctor justify dogma? Let us hear his words (*S. Th.*, Pt. I, Q. I, Art. I.):

> *I answer that,* it was necessary for man's salvation that there should be a knowledge revealed by God, besides philosophical science built up by human reason. Firstly indeed because man is directed to God, as to an end that surpasses the grasp of his reason; . . . But the end must first be known by men, who are to direct their thoughts and actions to the end. Hence it was necessary for the salvation of man that certain truths which exceed human reason should be made known to him by divine revelation. Even as regards those truths about God which human reason could have discovered, it was necessary that man should be taught by a divine revelation; because the truth about God such as reason could discover, would be known only by a few, and that after a long time, and with the admixture of many errors. Whereas man's whole salvation, which is in God, depends upon the knowledge of this truth. Therefore, in order that the salvation of men might be brought about more fitly and more surely, it was necessary that they should be taught divine truths by divine revelation. It was therefore necessary that, besides philosophical science built up by reason, there should be a sacred science learnt through revelation. [Tr. by Dom. Fathers, Vol. I, pp. 2–3.]

Reason, then, is insufficient to give us the basis for proper conduct. Some truths are needed which reason could not secure; even those which it is able to reach are open but to the few, after long labors, and "with the admixture of many errors." The basis of dogma thus is practical need. Salvation we must have—at least we must believe that we have the means and the possibility of it. Wherefore there must be a fixed fund of truth, and a source of this truth, which is God. The argument is the argument for authority, found in many forms and in many departments of human life: e.g., the argument for political sovereignty, for a standard of weights and of measures, for an umpire in games, and so on.

Thus the acceptance of dogma is first the acceptance of God; this is the primary dogma. We have to believe in God because we have to believe in the possible deliverance of man. True, St. Thomas appears to give a rational proof of the existence of God in the very next Question of the *Summa* after the one from which we have quoted. Yet I think that, contrary to his evident intention, the argument is not purely rational; for its cogency depends upon the assumption of a certain dogma.

St. Thomas gives in Q. 2 five arguments for the being of God, all of which are forms of the argument to a first cause. Now the

causal argument is not of itself a wholly rational proof, even if its links are soundly joined. It argues from the fact of the given real world, and this is, so far as reason is concerned, a contingent fact. It is conceivable that there be no world at all, or else an irrational and fortuitous one; and if so, it is conceivable that there be no God. But this misses the true notion of God, who is by definition an absolute being, in no sense fortuitous. The causal argument has then no way of showing that God is more than a contingent being. For the principle can rise no higher than its source, and the source is this contingent world. What the causal argument needs is a proof that God, being the cause of all else, is *causa sui* also. But there is in the causal argument no proof of this. To be sure St. Thomas does endeavor to supply a proof. He argues that since nothing else can be the cause of God, God must be the cause of His own being (this argument is given later, in Q. 3, Art. 4). But this is clearly unsound; for there is no way of passing from the negation "nothing else causes God" to the affirmation "God causes Himself." God's being might be quite fortuitous. As matter of fact, St. Thomas tacitly assumes as a dogma that God is self-caused. He does not allow us to use the one argument which is intended to bridge this lacuna, viz., the ontological proof. For the ontological proof argues that even a possible perfect being is of such a nature as to make itself actual.

This argument is, indeed, the only truly rational one, for it leads to an *a priori* necessary being. And it is characteristic of the great Scholastic that he rejects this argument as far as human reason is concerned. The result is, then, that God remains to him a dogma. The reason of His existence can not be understood. And in accord with this, St. Thomas is bound to declare that our reasoned knowledge of God is always merely negative—He is not compound, not a genus, not finite, and so on. Here appears the estrangement between reason and dogma—the dogma is that which can not be understood. This estrangement is fundamental, too, for the Doctor asserts that there is merit in faith just *because* reason can not conform to it.

I do not accuse this great system of error in using dogma to reach God. I agree that the being of God is a dogma from the practical point of view. What I am objecting to is the exclusiveness and hostility that is set up between dogma and reason. The case, I think, stands thus: the being of God is a dogma—a bias, an inevitable faith that we must all have if we face life squarely and remember our extreme frailty—doomed as we are to die in a few years, burdened with sorrow and bodily weakness even in the happiest instances. But just because it is a dogma, the being of God

wants a rational explanation. We need to know *why* God exists. And the ontological proof, a wholly rational affair, answers this question. It is always thus with dogmas. So far from not needing a rational ground, they need such a ground above all things; not because they are uncertain, but because we need to array our certainties in systematic form. Dogma may be compared in this respect to the results of scientific experiment, which reason endeavors to put into a system of implications.

This comparison with science is, I think, based on an identity of nature. Science itself is largely dogma. First, the being of an external world is taken on faith; no scientist attempts to prove it. But later reflection shows that the parts of external reality constitute a well-ordered system, compulsory, permanent, capable of social verification; this renders the dogma of external reality coherent with observation. Herein reason *explains* dogma; but it does not render the being of the external world one whit more certain. There is a current misconception in this matter. We often hear it said, even by philosophers, that the sciences prove their results, whereas philosophy does not demonstrate its conclusions. As matter of fact, the sciences attain certainty only because they start with it—start, that is, with dogmatic beliefs which are accepted by all. For all men agree that there is an external world and that observation gives us its true character—a quite undemonstrable pair of dogmas. All men happen to be so constituted as to give easy assent to these; but they do not happen to be so constituted as to yield ready assent to what is not envisaged by sense-experience, or inference therefrom. Consequently philosophy, not starting from a dogmatic basis accepted by all, can not reach results accepted by all. True its results may be, but universal credence can scarcely be afforded them.

Secondly, the sciences assume the dogma that truth must be socially confirmed; the experiment must be capable of repetition by many scientists, and with the same result. It would be difficult, indeed, to prove why this must be so, did we not take for granted that all men view one and the same world. That common world being admitted, the dogma of social verification is indeed reasonable; but who has demonstrated the common world? Is it claimed that such a world is proved by the similarity of experience among many human beings? Yet that very similarity of experience itself rests upon the assumption of other conscious beings besides one's self—a basis which certainly no scientist ever tried to prove; and, I would add, no philosopher has ever succeeded in proving. No argument for the existence of our fellow-beings has a certainty comparable with that existence itself; and we might as well frankly admit that the consciousness of our fellows is the object of an inevitable faith.

In the third place, science is based upon the dogma of the uniformity of Nature. As a universal judgment, that uniformity is neither self-evident nor deduced from observation. Nor is it merely a working hypothesis; it is believed by everybody that all material particles are alike subject to the fundamental laws of matter, that the same cause if let alone produces the same effect, and so on. So firmly is this believed, that when we find an unexpected effect from a familiar cause, we are quite certain that there is an additional and hidden cause at work. The dogma of uniformity, we believe, *can not* be wrong; no observation can ever refute it. And we search for the hidden auxiliary cause until we find it. Thus in science does dogma prescribe our results and in a sense close off our investigations and dictate our conclusions in advance of observation. For the dogma is like any datum of observation in this regard; it is true in itself, and we are sure that nothing can show it to be false. Other truths we gather, and try to square with it, as we try to square the facts of magnetism with the facts of electricity. Dogma provides material for reason to work with; it tells reason what to seek grounds for believing, and furnishes the needed bias and preconception of investigation.

Of course, dogma does not give *all* the material for reasoning. External reality, the minds of others, the being of God—these are three great initial dogmas; but the particular traits of external reality, its colors, shapes, and so on, are directly given. So are the particular characters of our fellows, and to those who have mystical experiences, so are the attributes of Deity. Dogma pertains to matters that are not directly observed. It is the being evident of things not seen. And this evidence consists in the fact that, try as we will, we can not doubt that the content of dogma answers to reality; not because it is *implied* in anything observed or is intrinsically self-evident, but because the mere notion, entertained as a possibility, has at once a forcibleness that commands belief. Sometimes this forcibleness appears to be connected with a practical demand. That is the case, I think, with St. Thomas, who seems to accept revealed truth as a necessity for the proper conduct of life here and hereafter. The ultimate dogma in this case is the impossibility of doubting that we can live properly. For this impossibility no ground has been given; we make it appear rational by actually living with some success as moral beings, and thereby the dogma becomes coherent with the rest of experience. Sometimes a dogma commends itself without assuming the guise of a practical postulate; it impresses us with its own independent truth. An example of this is the belief that each conscious being ought to be allowed to live the fullest and richest life possible to it—provided

it does not thereby hinder such life in another. The rightness of this maxim is not that of a postulate of action, for action is quite possible without it. Nor is the maxim self-evident—it is not an axiom of reasoning—though eventually it may be proved to cohere with the demands of life and of reason. The rule simply appears a just one, and it carries weight with us.

To state the matter a little more precisely; dogmas are objectives (in Meinong's sense) which we perforce acknowledge when we think them, yet which are not observed by the senses nor intrinsically evident to reason. As far as reason is concerned, they are mere possibilities, but they appear with an impressiveness or weight which constrains belief. It is their force rather than their clearness or distinctness that commands assent. For there are two factors in truth and in belief: the relational factor "coherence" and the terminal or self-sufficient factor "force." Reason works with the former, testing truth by that criterion; dogma envisages the latter. And while these may eventually be united, they will always be distinct; neither can be reduced to the other. True, the force is perhaps a kind of self-evidence, but it is not the self-evidence of a rational insight, as if intrinsic to the content. Thus, it is self-evident that yellow resembles green; evident from the nature of their content. But it is not self-evident in this sense, even to most believers, that God exists. To most of us, existence is not at once seen to be an intrinsic property of the notion of God; and St. Thomas says —to none of us (though, of course, to God Himself). But even if the ontological proof is sound—as I think it is—the belief in God antedates that proof, and is independent of the intrinsic likelihood of the notion, or its implications. And whether or not they acquiesce in these claims, thinkers of every time have made obeisance to dogma. Their dogmas form the unproved major premises on which they build their systems. Can these major premises be mistaken? No: in the end every philosophical system gives on its positive side fundamental truth. But though dogmas are always true, it is not easy to be sure we have hold of one. Men have many times held as dogmas what were only private wishes.

What, then, is the criterion of dogma? I answer: there can be no general criterion. The Romanist finds a criterion in the authority handed down by our Lord to St. Peter and St. Peter's successors in the Papacy. Now this is a rational test, being based on historical evidence; but historical evidence is by no means infallible, whereas the criterion must possess absolute certainty. If, however, any man finds that particular body of historical evidence absolutely certain, he must accept the Romanist criterion. As matter of fact, men differ, and it looks as if they always will differ, on this point of

evidence. And that being so, we must declare that there is no universally certain test of dogma. There must be dogmas, but there is no fixed rule which shall distinguish the content of genuine from that of spurious dogma. One can only open his mind submissively and receptively, disregarding previous habits of thought and current fashions. This condition is, I believe, possible for all who are interested in ultimate reality, however difficult it is and however infrequently fulfilled. And no matter how many pretended dogmas may be put forth by one man or another, there are nevertheless real ones. The case is like that of memory, where mistaken remembrance does not discredit the true. Some of the genuine dogmas, indeed, I have pointed out. But I find no assurance that all men will agree on a definite body of dogma; nor, indeed, if they did so would the dogmas be better substantiated; for popular belief is surely no criterion. Each thinker can only espouse his own, trying to square the admitted facts of the world with them, and hoping, of course, that other men will agree with him. Also each thinker will naturally respect other men's dogmas, trying them in the flame of his own faith, and endeavoring, indeed, to believe them. It is not that one man is as good a judge of truth as another, but rather that no man can do anything else than this. In the inner citadel of his mind each man is separate from other men, and no matter how slavishly he may follow them it is by his own personal judgment and on his own responsibility that he does so. This ultimate freedom of thought he can not barter away; nor can he, without hypocrisy and cowardice, fail to proclaim the dogmatic insights that reveal themselves to him.

Contrary to what is usually believed, the dogmatic temper is a state of open-mindedness; it is a holding fast to insights already gained, and a prayer for new ones. It seeks ever new material to reason about, to compare with observed facts, to build into the edifice of metaphysics. It is bound by no idols of tribe, theatre, or market-place; it is creative in the only sense in which thought can be creative —not in the transformation of reality by thinking, which is a contradiction in terms, but in the addition of more things than are yet dreamt of in our philosophy. Our habit of thought today, self-critical in the extreme, fearful of ideas not suggested by the physical sciences, marks low intellectual vitality. Not in such a spirit did past thinkers make the history of philosophy, with its treasury of significant ideas. And who has shown that that history is finished? Rather let each of us contribute his quota of dogma to enrich future thought, to give men something to prove, and to enlarge the sum total of humanity.

The large and general lesson, then, which we should learn from

the Thomistic philosophy—a lesson quite overlooked by most of us—is that we need dogma, and that dogma forms the beginning and the motive of reason. Reason, and with it observation, is secondary, receptive, feminine; dogma is masculine, taking the initiative. Our ultimate faiths—few there are of so impoverished minds as to be without them—tell us what to look for; reason, using observation and inference, follows the lead of these faiths. So it has been in the history of philosophy, and so it is to a high degree in the conduct of science. At the bottom of our hearts are certain things of which we feel absolutely sure; so sure that we shall always reconsider any reasoning and observation that appears to deny them. But I think we must differ from St. Thomas in regard to the separation of dogma from reason. Every dogma ought to be made eventually self-evident or implied in other certainties of whatever kind; dogma must in the end unite with reason. If the Creation is a dogma (as I grant that it is), then we should endeavor to understand the why and the how of Creation. We can not be content with disconnected certainties, however unshakeable these may be; we must look for a coherent scheme which shall join the dogmas in a harmonious system. This and this alone is the task of reason; for reason does not give ultimate categorical principles, but traces their connection with one another.

W. H. SHELDON.

YALE UNIVERSITY.

A PHENOMENOLOGICAL INTERPRETATION OF PHYSICO-CHEMICAL CONFIGURATIONS AND CONSCIOUS STRUCTURES [1]

PART II

V. MOLECULAR ORIENTATION, CRYSTALS, AND ORGANISMS

IN the preceding pages of Part I we have observed how the transition from one level to another brings about a discontinuity in probability. This we have attributed to the appearance of a new coördinating force. Just as the atom is something more than the sum of the positive and negative charges, so—if the present thesis is correct—the same non-additive configurational process is at work in the transition from molecule to crystal, and from crystal to cell. In the case of the orientation of molecules in a magnetic field it will be admitted that the inferior random forces of the molecules are now under the sway of a superior force. But it remains to be demonstrated that the same process which underlies the orientation of molecules also plays an important rôle in crystallographic and or-

[1] Continued from preceding issue, No. 14.

ganic phenomena. We will now turn to a discussion of these transitions to higher emergents.

Physicists formerly attempted to explain the properties of matter in terms of a "generalized" molecule, which was pictured as spherical in form, and surrounded by a symmetrical field of force.[2] But this view, while satisfactory as a picture of gas molecules, proved inadequate for the molecules of liquids. Especially in the interfacial phenomena studied in chemistry it is necessary to picture the molecules of long chain compounds as being anything but spherical. This change in viewpoint also carries with it an abandonment of the idea that the molecules studied in chemistry are necessarily surrounded by symmetrical fields of force. Thus, according to present views, the electromagnetic field near the molecule varies greatly from point to point, and only at distances which, compared to the dimensions of the molecule, are great, does the field approximate one of spherical symmetry.

While the fields of force of molecules may, from a microscopic viewpoint, be unsymmetrical, the emergence of higher continuants is marked by the appearance of a new simplicity, which attends the increase of complexity. Thus in the development of crystals there seems to be a rising above the principle of least action as applied to molecules. In this connection I should like to return to the previous suggestion that our two pervasive laws of nature might be shown to be dual manifestations of one process. I may quote the following passage from E. C. Stoner's book on *Magnetism and Atomic Structure* (1926, p. 343) as confirming this idea. The author is here discussing the general problem of stability of atomic and molecular structures. He points out:

> On the one hand, there is a tendency for the number of electrons round a nucleus to be equal to the positive charge on the nucleus, so that there is no electrostatic field (at a distance); on the other, there is a tendency for the magnetic moments of the electron orbits to compensate each other, so that there is no external magnetic field. While the tendency to "electronic neutrality" is usually the stronger, the tendency to "magnetic neutrality" manifests itself in the formation of ions of the inert-gas type. . . .
>
> The electrostatic tendency (both in respect to neutrality, and to the binding of electrons) may be expressed by the statement that *the electrostatic energy tends to a minimum.* An attempt to express the magnetic tendency in an analogous manner seems to lead to difficulties, for two similar electronic orbits balance when their moments are opposed, and *the mutual potential energy is then a maximum.* A statement in terms of resultant external field seems simpler—for the resultant field, whether electrostatic or magnetic, is a measure of the intrinsic energy of the system when this is considered as a whole.

[2] For some of the information herein stated I am indebted to several articles on these subjects which appeared in *Science Progress,* Vol. XXI (1927), *passim.*

It will be noted that the expressions which the present writer has italicized affirm the existence of a tendency towards a reduction of electrostatic energy to a minimum, and a tendency of potential energy to achieve a maximal—both being phases of a system considered as a whole. This seems to me to provide a basic analogue for a dual process into which the phenomenal unity of the emergents at all levels of nature can be split.

A discussion of the transition from molecules to crystals to cells involves a discussion of the rôle of the orientation of the molecules in these emergents. It is generally recognized that in crystals the molecules are oriented in such a way as to take positions of minimal potential energy. And yet the sum total of energy stored up in a crystal is much greater than that involved in any of its constituents. Thus we see that a crystal, a second order simplicity, seems to obey our two laws of minimal and maximal action. Without delaying too long upon these considerations, the following passage may be set forth as illustrating a type of explanation which is now in vogue, having for its purpose an intimate picture of the nature of crystallization. According to Jerome Alexander[3] "the tendency of aggregations to crystallize, that is, to assume regular but various space lattices, having cleavage planes of unequal strength, further indicates that the fields of the particles (atoms or atomic groups) are of unequal strength at different places, and are, in the course of group or crystal formation, in some way adjusted to each other.

"The more highly complicated the particles (atoms, molecules or molecular groups), the less the probability that they will present to each other their various (electrically) polar areas in such a fashion that true crystal lattice or crystallographic union may take place. . . . To effect such union speedily the meeting, besides being properly oriented, must be at efficient velocity. However, since most particles have a plurality of areas of electric and magnetic fields, some kind of attachment less rigid or lasting than true chemical combination may occur. This seems to account for the tendency of more complicated molecules to form haphazard or random groups, from which, however, they *tend* to move toward their position of minimum potential—one big crystal."

This investigator then transfers these ideas of optimum kinetic velocity and oriented meeting to an explanation of catalytic phenomena. Taking up the story at this point from our own point of view, it remains to be pointed out that just as there is a discontinuity in probability between potential energy patterns in molecular groups and the tendency towards a minimum of potential energy in crystal

[3] "Kinetic Activity, Oriented Adsorption and Molecular Deformation as Factors in Catalysis," *Science*, 1927, pp. 62–63.

patterns, so there is a similar discontinuity between the tendencies towards orientation of molecules (as molecules) in biochemical processes and the larger wholes of organismic patterns.

It is well known that the activities of organic colloids take place within fluid media. This fact of the preponderance of water in organic matter makes it possible for two types of phenomena of great importance to occur. Surface tension phenomena and interfacial forces can manifest themselves in such systems, and these are of superlative significance in the processes of life. A second type of phenomenon is the possibility of the orientation of molecules in liquid media. Let us discuss these phenomena briefly, observing how they fit into our viewpoint.

The full molecular theory of liquids is not worked out, owing to the complicated nature of the forces involved between curiously shaped molecules in constant rotational and translational motion. The mathematics of a microscopic picture is always complicated; and yet nature has already worked out the solution—and it seems that the superior coördinating forces of nature sometimes succeed where the mathematicians fail. As an illustration of this we have the phenomenon of surface tension. The most fundamental property of liquid surfaces is that of spontaneous diminution of area to a minimum. According to one explanation this tendency to diminish surface area is due to the fact that the outer layer of molecules acts as a tight skin, tending to contract uniformly. Here a physical meaning is ascribed to the "contractile skin" of the surface. But according to other writers the contraction of liquid surfaces is not due to a mysterious and hypothetical skin, but is due to the presence of a definite amount of free energy in each square centimeter of the surface. That is, the terms "surface tension" and "free surface energy" are equivalent, and the surface "film" represents the net force of a unimolecular "surface," the attraction being perpendicular to the outer layer of molecules.

Here we have a beautiful illustration of a complex simplicity. The surface tension of the film represents an averaging of the unbalanced inward molecular attractions. And yet no one could predict from a knowledge of molecules the properties of films. The gestaltists very properly take a soap bubble as an illustration of a configuration. Moreover, while the film or bubble, relative to the constituent molecules, is a new simplicity, these phenomenal emergents again appear in higher complexities, which, in turn, result in new simplicities.

We now come to a consideration of the rôle of oriented molecules in biochemical processes. The credit for establishing the existence of the orientation of molecules belongs to Irving Langmuir. But

W. G. Hardy has advanced these views a step further. He showed that a molecule surrounded by an unsymmetrical field of force, if situated in the interfacial region where one fluid shades into another, will have a minimum potential energy when oriented in one particular direction. Thermal agitations may tend to break up an orientation. The substance of Hardy's theory is that orientation will occur when the tendency to come to a position of minimum potential energy is strong enough to *prevent* the molecule from rotating freely in the course of Brownian movements. Here again we see inferior random forces yielding their freedom of choice (or "degrees of freedom") to a higher order of simplicity.

The rôle of orientation of molecules in biochemical processes is well known. According to some theorists the migration of ions through semi-permeable membranes, which occurs, for example, in nerve conduction, could not take place if it were not for the fact that the molecules of the membranes have an electrical moment, and under the influence of fields of force are capable of rotating in such a way that the longest axis of the molecule takes a position perpendicular to the membrane, thus allowing the ions to slip through. Now in conscious purposive behavior (and also in reflexes and instincts) these inferior random forces are so integrated into each other that the unity and temporal melody of response occurs, indicating that some sort of *closure* associated with a superior coördinating force is in operation. In other words, the same phenomenon occurs in the successive integrations of biological response mechanisms which occurs in crystallization. That is, the orientation of molecules underlying nervous transmission and integration is subordinated to some dominating plan which, like a soap bubble or a crystal, is a nonsummative whole or *gestalt*. In fact, one writer holds that any attempt at orientation is an attempt at crystallization. I can not certify as to the truth of this view, but crystallization, organic behavior patterns, and conscious structures have this in common that they tend to realize the optimum compromise between minimum potential energy and maximum activity through a longer period of time. In view of the great importance of oxidation and reduction in biological processes it seems that the macroscopic rhythm of life may be compared to a flame. Let me enlarge upon this idea.

With a certain amount of poetic license life has frequently been compared to a candle. The relation is much deeper than that suggested by a mere figure of speech. Life is literally a process of combustion. True, the oxidative processes of living matter are slower than the rapid oxidations which constitute flames, but it is nevertheless recognized that one of the characteristics of living organisms is their capacity to oxidize substances incapable of oxidation at or-

dinary temperatures. Living matter is peculiar in the *speed* with which hydrolytic, oxidative, and reductive processes occur. It owes this power to the catalytic agents or enzymes found in living organisms. Still more important for the present view is that fact that oxidative and reductive processes now appear fundamentally to be electrical in character.

This view receives support from certain investigations which were summarized in a recent article on the "mechanism of oxidation in living tissues."[4] One paragraph may be quoted to illustrate and confirm this idea:

"Recent work has shown that molecules are oriented in a surface, so that it may be considered as a mosaic composed of the different molecules arranged simply or in groups in a definite pattern, which is characteristic for each cell, but varies slightly with growth and activity. This molecular arrangement will lead to the existence of varying electric fields scattered over the surface of the cell, and the author [J. H. Quastel] considers that a molecule is 'activated,' and so becomes susceptible to oxidation (or reduction), when it comes under the influence of one of these electric fields, which causes a shift of electrons from one atom to another of the molecule."

This work suggests a possible mechanism for the electromagnetic interpretation of matter, life, and mind which the writer has proposed. In this view consciousness is simply the electromagnetic field of force associated with the electrochemical reactions of brain patterns. In terms of the present doctrine, mind is simply that synthesis which we describe by the presence of a superior coördinating force. But it must be remembered that crystals and molecules also have their minds!

VI. Brain Configurations, Conscious Structures, and Chronaxy

The view outlined in the above paragraph was originally developed in harmony with the notion which the *gestalt* theorists have presented, to the effect that conscious structures *are* the configurational brain processes, and that conscious purpose is simply a special case of the "closure" which is common to many types of electrodynamic processes. Since this view was first presented the writer has become somewhat skeptical of the universal applicability of this view to all types of mental processes. It is admitted that in simple perceptual processes this view is adequate. The tendency to complete a perceptual pattern (even when parts of the visual image fall upon injured portions of the retina, or on the blind spot), is due to a

[4] *Nature*, June, 1926, p. 910.

tendency towards a closure in the physiological process—a closure taking place in accordance with the law that a *gestalt* tends to become as simple and compact as possible, i.e., to satisfy the demands of minimal configurative energy. But I doubt whether this view is satisfactory when it comes to complex conceptual processes. (Perhaps for this reason gestaltists are prejudiced against the *concept* as a necessary element in higher thought processes.) To be concrete, I do not see that the "neatness" which mathematicians ascribe to a postulate set (such as one of E. V. Huntington's) can be shown to be deducible from the "closure" of physiological processes. Certainly there is a very interesting analogy here, but if *gestalt* theory is to avoid epistemological dualism it seems that there must be something more than a mere parallel.

To escape an absolute dualism the writer now advocates the doctrine that there is a similarity of "structure" between the brain configuration and the conscious structure. The brain is here conceived to act as a step-up transformer, which produces a conscious structure (a postulate set, for example) bearing some definite relation to the activities of the nerve cells. This relation is held to be one of *attunement*. L. Lapicque has demonstrated that each cell has a "chronaxy," and so far as I know there is no objection to supposing that something analogous to a transposed melody is produced by the central neuronic attunement, which is the basis of the conscious structure, and that this conscious structure is synchronized with the brain process. This similarity of structures is analogous to that holding between the electromagnetic waves which are transmitted into the receiving apparatus of a radio set and the sound waves produced by the loud speaker. This relation of similarity of structure has been well stated by Bertrand Russell, in another connection, in his *The A B C of Relativity* (p. 227): "We naturally interpret the world pictorially; that is to say, we imagine that what goes on is more or less like what we see. But in fact this likeness can only extend to certain formal logical properties expressing structure, so that all we can know is certain general characteristics of its changes. Perhaps an illustration may make the matter clear. Between a piece of orchestral music as played, and the same piece of music as printed in the score, there is a certain resemblance, which may be described as a resemblance in structure. The resemblance is of such a sort that, when you know the rules, you can infer the music from the score or the score from the music."

Such a relation of similarity of structure does not allow us to hold strictly to an epistemological monism. In my own view this relation between subjective or conscious patterns (or what we might call *internographs*) and the objective patterns (or *externographs*) is one

of synchronization between physiological *gestalten* and conscious *gestalten.* If this attunement is one holding between a transposed melody and the original tune, I am not sure but what this doctrine may be in accord with *gestalt* theory, for *gestalt* theory provides specifically for the transposability of *gestalten.*

VII. Evolution, Growth Potential, and Neurobiotaxis

In an article on "A Monism of Creative Behavior" the writer[5] presented the following generalized interpretation of evolution: Every atomic fact of nature is set in a wider environment of energy which constitutes its field. Given a system of particles, there will be a field of real potentialities which will determine what kind of configurations can be further assimilated to this stress-center. At any given time a cross section of nature will reveal a *static* aspect, which represents what has already been accomplished, and functioning in accordance with which constitutes the mechanical aspect of behavior, and a *dynamic* aspect, which represents the actual transformations in progress. It is this nisus towards the future, the movement towards the integration of higher unities, which we designate as the "teleological" aspect of nature. The (relatively) static aspect we call matter, which is the bound energy serving as the "material" vehicle of the transformations in this movement towards the cone of the future.

By an extension of certain ideas originally presented by Alfred J. Lotka the writer arrived at the following interpretation of biological evolution: Since, as Dr. Lotka tells us, the fundamental object of contention in the life-struggle in evolution is available energy, the advantage in the struggle for existence must go to those organisms whose energy-capturing devices are the most efficient. In addition to directing energy into channels advantageous to itself, there will also result an increase in the total mass of the organic system which serves as the seat of the energy flux, for this energy flux is proportional to the mass of the system. This view may be summed up in the statement that evolution will tend to increase the total energy flux. (In Dr. Lotka's view no account is taken of the qualitative differences in energies, which *is* taken into account in the present view.) For evolution as a whole (i.e., evolution as a phenomenal pattern) the situation may be pictured as follows: Just as human behavior represents a compromise between a principle of least action and a principle of maximal energy expenditure, so every organic behavior complex represents a compromise between standardization (heredity) and variation (novelty or mutation). Phylogenetically

[5] This Journal, Vol. XXI (1924), pp. 477–492.

it appears to be the aim of evolution to produce the greatest variability consistent with standardization. Just as in chemistry

$$\text{velocity of reaction} = \frac{\text{driving force}}{\text{resistance}}$$

so the

$$\text{movement of evolution} = \frac{\text{variability}}{\text{standardization}}$$

In brief, the formula for integration is that the evolution of behavior complexes expresses the tendency to increase to an optimum the "activity coefficients" of the interactions between bound energy patterns (continuants or emergents) and the cosmic environment of radiant energy.

Elsewhere I have suggested the possibility of applying the biochemical conceptions of "growth potential" and " physiological gradients" to the problem of explaining how functions can build up structures. More recently a similar view has been presented by Dr. William A. White.[6] According to Doctor White there is a tendency in living matter for paths of energy to become permanent. This tendency is called the *structuralization of function.* This dynamic gradient of energy, which is compared to a field of force being laid down in structureless protoplasm, actually structuralizes the protoplasm into tissues which then function in accordance with this permanent pattern. Matter thus appears as mind which is hidebound with habit. The parallels between this view and the one which the writer has developed are obvious. In this same issue of *Psyche* the writer, in reviewing Dr. Whitehead's *Science and the Modern World,* discussed the tendency to dematerialize the notion of substance. The way in which the dualism of matter and energy can be resolved is there suggested to lie in an extension of the notion of *pattern.* The following passage quoted from that review brings out this idea: "It is evident, of course, that the biologist still finds it convenient to speak in terms of a dualism of matter and energy. Certainly there is some difference between the *energy* of the nervous current and the *material* structure, the nerve fibre, over which the energy 'flows.' But perhaps this is only a difference of 'pattern.' Thus the pattern of motions involved in transporting coal from a mine to a blast furnace is different from the pattern involved in converting the same coal into heat energy. (I am indebted to Professor Charles M. Child for this illustration.) Similarly, the pattern involved in transporting energy from one part of the human body to another is different from that involved in building up the organism from the embryo to the adult. And yet there must be a very intimate relation between these various kinds of motions. It is obvious, of course,

[6] "The Adjustments and Unity of the Organism," *Psyche,* 1926, No. 25.

that the term 'pattern' is used in several different senses. Dr. Whitehead tells us that there are two sorts of change radically different from each other: there is vibratory locomotion of a given pattern as a whole, and there is vibratory change or deformation of patterns. How one type of change effects (or perhaps even builds up) the other type of pattern remains to be determined. Perhaps Professor Charles M. Child's conception of 'physiological gradients' will eventually help us to understand the relation between patterns within individual organisms and the phylogenetic evolution of all living forms."

Another clue to an understanding of the way in which structure may be determined by function is found in C. V. Ariëns Kappers'[1] doctrine of Neurobiotaxis. The essence of this doctrine is as follows: One means of investigating metabolic gradients in mature organisms is by determining the differences of electrical potential along the gradients. This fact sustains an intimate relation to Kappers' doctrine of neurobiotaxis, which is figuring more and more prominently in modern neurological theory. In a growing organism the shifting of nerve cells is a common phenomenon. The regeneration of the cut nerve fibre, as it grows towards the muscle which it originally innervated, has an embryological parallel in the growing axon of the developing neuroblast (embryo nerve cell). These migrations are analogous to the form of behavior known as taxis or tropism. Kappers claims to discover evidence that the topography of cell-groups in the spinal cord, mid-brain, and fore-brain is determined by the regions where the largest number of excitations reach the cells. The doctrine of neurobiotaxis states that the direction of the developing neuroblast is controlled by the bio-electric processes which result from stimulation. That is to say, if several stimulative charges occur in the nervous system, the outgrowth of the chief dendrites, and eventually the shifting of the cells, takes place in that direction whence the largest number of stimulations come. This means that the developing neurones are polarized, and that the axons grow out into the direction of the excitation current. This method of growth is quite comparable to the process of electroplating, and Kappers' term "galvanotropism" is very appropriate.

Kappers claims that this view is consistent with R. S. Lillie's work on the relation of oxidative processes in growth. He also points out that Child has called attention to the probability that during the evolution of tissues electric conditions occur similar to those in stimulation. But the exact process by means of which this embryonic polarization acquires phylogenetic engrammatic character is not explained.

[1] "On Structural Laws of the Nervous System: The Principles of Neurobiotaxis," *Brain*, Vol. XLIV (1921), pp. 125–150.

The doctrine of neurobiotaxis provides an excellent basis for the establishing of physiological gradients in ontogenetic development. Since the fields of electric currents determine individual behavior patterns, one would infer that electric potentials play a rôle in controlling the specialization of tissue in evolutionary (phylogenetic) development. But only such an enthusiastic advocate of scientific synthesis as Eugenio Rignano would attack such a problem at the present time, and I present his scheme as the only one which, so far, has been thought out in any detail.

The similarities between memory and heredity have appealed to a number of thinkers; and E. Hering, Samuel Butler, Richard Semon, and E. Rignano have attempted to work out systematic conceptions of the inter-relations between these two conservative tendencies. I am more especially interested in Rignano's conception, which he has expounded most recently in his *Biological Memory,* because his theory seems to provide the mechanism which will enable us to bring together such facts as underly the doctrines of physiological gradients, neurobiotaxis, and the theory of heredity. However, I should point out that Professor Child objects to my application of his view to Rignano's hypothesis because the doctrine of biological memory presupposes the notion of the inheritance of acquired characteristics and the idea of "specific energies" of the nervous system.

Rignano's hypothesis assumes the existence of "specific nervous accumulators." The fundamental hypothesis is that every functional stimulus is transformed into a specific vital energy, and deposits in the nucleus of the cell a specific substance which is capable of discharging in an inverse direction as soon as the dynamic equilibrium of the organism is restored. These specific nuclear substances, different for each cell, are accumulated also in the nuclei of the germinal substance, constituting what Rignano calls the central zone of development. In other words, each functional adaptation changes slightly the dynamic equilibrium of the organism, and this change in the system of distribution of the nervous currents leads to the deposit in the central zone of development of a new specific substance. In the development of the next individual this new specific element enters into activity and reproduces the nervous current which has formed it, as soon as the organism reaches the same condition of dynamic equilibrium as obtained when the stimulus acted upon the parent.

Development can thus be regarded as consisting of a number of stages, at each of which new specific elements enter automatically into play and lead the embryo from that stage to the next. If this view that heredity is simply biological memory is true, we are well on the way towards understanding how the patterns of energy trans-

formation given in ontogenetic nervous integration are related to the patterns of physiological gradients representing the phylogenetically established substrata of behavior. In such a view structural *gestalten* are simply crystallized functional *gestalten.*

And now a word concerning the philosophical implications of this view. It will be noted that in this view the properties of every emergent in nature bear some relation to the total structure of the universe. Man, therefore, is not to be regarded as a byproduct of the indifferent forces of nature. And the appearance of the first living organism was not a mysterious accident, but bears some definite relation to the pattern of cosmic evolution. It will also be observed that in the doctrine of the relation of "mind" and "matter," and in the acceptance of an eternalistic singularism, the present view approaches closely that of Spinoza. The singularistic doctrine results from the conviction that unless there is some sort of "closure" for the cosmic *gestalt,* it is doubtful whether there can be closure within any of the relatively independent configurations within the universe as a whole.

OLIVER L. REISER.

UNIVERSITY OF PITTSBURGH.

BOOK REVIEWS

The Natural History of our Conduct. WILLIAM E. RITTER, with the collaboration of EDNA WATSON BAILEY. New York: Harcourt, Brace & Co. Pp. ix + 339.

The author of this book is professor emeritus of zoology and director emeritus of the *Scripps School of Oceanography* of the University of California. Since the establishment of *Science Service* he has been its president. In the preface Dr. Ritter announces that the present volume is to be followed shortly by another entitled *The Natural Philosophy of our Conduct,* which will set forth more in detail the philosophical implications of his position. Presumably this book which is soon to appear will have a special interest for philosophers, but the volume now under consideration is certainly worthy of the attention of every student of human behavior.

Dr. Ritter frankly avows himself a naïve and a critical naturalist. *Naïve naturalism* is the gathering and the interpreting of facts external or alien to the investigator, whereas *critical naturalism* is the study of minds and what they accomplish. The consciously knowing and thinking mind is a natural fact among other natural facts. Yet the cognitive relation, especially when involving self-knowledge,

"constitutes not merely the central wonder of human nature, but the central wonder of all nature" (p. 6). The only fruitful method of developing critical naturalism is the comparative method, which has hitherto been employed by biologists only in the study of bodily structures and functions, such as the digestive, circulatory, and nervous systems. "Our enterprise aims to utilize the activities of the lower animals as effectually for enabling us to know our own activities and to control our own conscious acts, as we now utilize the bodies of such animals for enabling us to know our own bodies and to control our purely vegetative functions" (p. 9).

In applying the comparative method the author repudiates the attempts of mechanistic biologists to explain the phenomena of life in terms of physico-chemical processes. He would even take advantage of "the more or less legitimate custom of personifying nature" (p. 318). Nor should the critical naturalist restrict himself to the data obtained from laboratory experiments with animals. In fact, Dr. Ritter values the data obtained by out-of-door naturalists from their field observations much higher than he values the results of experimentation by comparative psychologists, because the former alone reveal animals "living their lives in their own way under natural conditions" (p. 64). In the course of the book the author affirms his belief that animals possess consciousness, moral sense, and personality. The roots of all of these characteristic human qualities are in animals of a lower order even than the primates.

No reputable philosopher of our day would for a moment question the fruitfulness of this evolutionary approach to the study of human conduct. Many such philosophers do doubt its adequacy. They believe that long after this line of reasoning has been plumbed to its depths thinkers will be seeking knowledge of mind through introspection and through a study of the intellectual products of the most gifted individuals. There is nothing in the activities of animals that is at all comparable to the creative genius of Plato, Aristotle, Shakespeare, Milton, Newton, Kant, or dozens of others, and he who would know such minds must at least supplement the comparative method of psycho-biology. If, as Dr. Ritter admits, the laws of physics and chemistry are inadequate to explain the phenomena of life, then by that same reasoning the laws of psycho-biology are inadequate to explain the higher reaches of human achievement. The admission that living beings are unique carries with it the admission of the uniqueness of humankind, although this need not mean a denial of continuity of evolution.

After stating his general position the author proceeds to examine the evidence for organic evolution (Chapters III–V). He reaches the conclusion that the theory has a high degree of probability, but

he especially emphasizes the fact that it lacks certainty. He admits that he is here under the influence of Keynes's theory of induction as developed in *A Treatise on Probability*. Dr. Ritter apparently overlooks the fact that every scientific law or theory is only probable according to the Keynes theory. This causes him to exaggerate the element of probability there is in the evidence for organic evolution.

Chapters VI–XVI contain numerous examples of successful and of mal-adaptive animal activities (including human), classified according to the type of activity and arranged in the order of their complexity. The examples are interspersed with the author's interpretations and comments. Although the examples are drawn from various reports of original investigations made by experts, this portion of the book is lucid, interesting, and informative. Every student of human and animal conduct will profit from reading this material.

In a concluding chapter the author argues persuasively that it is the special combination of hands and head in man which makes him the most actively adaptive of all living beings.

A bibliography lists all of the books quoted and there is an excellent index. But it is a little surprising to find that Dr. Ritter has no citations from or references to the writings of Bergson, Driesch, Haldane, J. Arthur Thompson, or to Lloyd Morgan's recent works. It would seem that he who aspires to enter the field of philosophical biology should give some attention to these stalwart pioneers.

DANIEL SOMMER ROBINSON.

MIAMI UNIVERSITY.

Aspects of Ethical Religion. Edited by HORACE J. BRIDGES. New York: American Ethical Union. 1926. Pp. 423.

The recent fiftieth anniversary of the Ethical Culture Movement suggests the desirability of a study of the philosophy which this movement aims to make socially prevail. When this study comes to be made, the present volume, prepared in honor of the founder, Dr. Felix Adler, will furnish valuable material. It will also present some serious difficulties, for the nineteen contributors are not in agreement on their basic matters. Stanton Coit, of London, brings Dr. Adler close to Bradley and Bosanquet. For the former, he insists, as for the latter two, morality lies "essentially in a union (using Bosanquet's words) with a real supreme perfection in which finite perfection, though actual, is felt to be transcended and abolished." The same faith speaks from between the lines of Mr. Neumann's chapter, and elsewhere in the book. But one catches a different note in Mr. Salter's discussion. He moves towards William James. The view he presents "is that we live in a world not

made for us, but into which we have to fit." And he urges that man draw upon his own capacity for heroism in the face of a life which at best can not escape tragedy. "We may be unbroken to the last, may go down into the valley and shadow of death, strong, alone, conquering." In the same vein S. Burns Weston says that "ethical religion has to do with this life and this life only." Obviously there is disagreement here and not of a superficial sort.

Behind disagreements, however, there are agreements. One of these is, in Mr. Martin's words, the doctrine that we "approach divinity along the line of moral reality." Speaking of the historical religions, Mr. Coit says: "They began with divinity; we with duty. They went on to moralize deity; we, to deify morality. They said that the Real is good; we say that the Good is real." (What a chance for an article!) They agree, too, on placing high value on man. As Mr. Elliott puts it, "There is an uncommon good in every common man." Here, again, the accord is not perfect, the orthodox position (if one may so speak) having reference to an "essential self" in man, while a heretical tendency would be more generous to man in his outward aspects. Moving in this latter direction Mr. Snell (M. P., London) emphasizes the ethical value of the "will and the character of those who do the work of the world." "The altar of the ideal," he declares, "may be erected anywhere where useful work is to be done, and men may as rightfully present themselves before it in one place as another." And this touches upon what may be selected as a third agreement, the bringing of religion into intimate relation with the conduct of life. It is part of the doctrine that "Sundays and churches are no more sacred than week-days and mountain-tops."

Taken altogether the volume is a handsome testimonial to the really significant work Dr. Adler has done. It shows in all sorts of ways the wide ramifications of his interests and the profundity of his influence. But this is purposely a brief review; the subject really demands and amply deserves a thorough-going study.

M. C. Otto.

University of Wisconsin.

JOURNALS AND NEW BOOKS

The Philosophical Review. Vol. XXXVI, 4. The Socratic Problem: *H. H. Dubs.* The Significance of John Grote: *C. E. Whitmore.* Is Change Ultimate?: *A. R. Wadia.* Science—Existential and Non-Existential: *A. C. Benjamin.* Proceedings of the Western Division of the American Philosophical Association. Discussion:

"Mind and Its Place in Nature": *C. J. Ducasse.* Discussion: An Organic Superpersonality—A Rejoinder: *W. D. Lighthall.*

INTERNATIONAL JOURNAL OF ETHICS. Vol. XXXVII, No. 4. Of "Right" and "Good" and of Mr. Ross's Views: *John Laird.* Ethical Bases for Economic Reward: *E. N. Henderson.* Private Views of the Last *Fin-de Siècle: C. Williamson.* Christian Industrial Democracy: Its Moral Basis: *D. A. MacLean.* Mr. Bertrand Russell's Ethical Beliefs: *O. Stapledon.* The Characterization of Moral Evolution: *A. G. A. Balz.* Determinism and Moral Experience: *J. E. Turner.*

THE NEW SCHOLASTICISM. Vol. I, No. 3. Philosophy: A Study in Adjustment: *F. A. Walsh.* Teleology of St. Thomas: *E. A. Pace.* One Aspect of Einstein's Theory: The Equivalence of Light: *E. Von R. Wilson.* Does Natural Realism Break Down?: *J. H. Ryan.* Chronicle: La Philosophie en Belgique en 1926: *R. Kremer.*

REVUE PHILOSOPHIQUE. 52e Année, Nos. 5 et 6. La peur de l'action: *P. Janet.* Le choc émotionnel: *G. Dumas.* L'hétérogénéité fonctionnelle du plaisir et de la douleur (*fin*): *M. Pradines.* Le cœur et la raison selon Pascal (*fin*): *J. Laporte.*

The Cambridge Ancient History. Edited by J. B. Bury, S. A. Cook, & F. E. Adcock. Volume V. Athens, 478–401 B. C. New York: Macmillan Co. 1927. xxii + 554 pp. $7.00.

Dasgupta, S. N.: Hindu Mysticism. Six Lectures on the Development of Indian Mysticism. (Harris Lectures for 1926 delivered at Northwestern University.) Chicago: Open Court Publishing Co. 1927. xx + 168 pp. $2.00.

Harris, C. R. S.: Duns Scotus. Vol. I—The Place of Duns Scotus in Medieval Thought. Vol. II—The Philosophical Doctrines of Duns Scotus. Oxford: Clarendon Press. New York: Oxford University Press, American Branch. ix + 380 pp; 401 pp. $15.00.

Myerson, Abraham: The Psychology of Mental Disorders. New York: Macmillan Co. 1927. vii + 135 pp. $1.40.

Theodorakopulos, Johannes: Platons Dialektik des Seins. (Heidelberger Abhandlungen zur Philosophie und ihrer Geschichte, No. 13.) Tubingen: J. C. B. Mohr (Paul Siebeck). 1927. iii + 96 pp. 4 M.

Whitehead, Alfred North, and Bertrand Russell: Principia Mathematica. Second Edition. Cambridge: University Press. American agents—New York: Macmillan Co. Vol. I: 1925. Vols. II and III, 1927. xlvi + 674 pp; xxxi + 742 pp.; viii + 491 pp.

NOTES AND NEWS

The establishment of the William Allen Neilson chair of research has recently been announced at Smith College. The chair is the gift of friends and admirers of Dr. Neilson in honor of the tenth year of his presidency of Smith. It was presented by Mr. George Bliss McCallum of Northampton, a member of the Board of Trustees, speaking for the donors.

The terms on which the chair is established are somewhat unusual, since the holder is not only not expected to teach, but is left absolutely free to study and experiment as he pleases, publishing or not as he prefers. The intention is to elect a distinguished scholar and to make it possible for him to work for five years under practically ideal conditions.

Professor Kurt Koffka of the University of Giessen, Germany, has been chosen to hold the chair for five years. He will have at Smith College a fully equipped laboratory for his research, which will probably be concerned with problems of learning. He will have associated with him assistants who will conduct experiments under his direction.

Professor Koffka, together with Professor Wolfgang Köhler and Professor Wertheimer of the University of Berlin, is responsible for the experiments which have led to the development of the *gestalt* theory in psychology. Professor Koffka has published *Zur Analyse der Vorstellungen und ihrer Gesetze* and *Die Grundlagen der Psychischen Entwicklung,* which has been translated into English and Spanish. He is the editor of a series of publications, *Beitrage zur Psychologie der Gestalt* and co-editor of *Psychologische Forschung.* In 1924–25 he was Schiff Professor at Cornell University. In the summer of 1925 he taught at the University of Chicago, and this last academic year he was visiting Professor of Psychology at the University of Wisconsin.

Dr. Howard D. Roelofs, Assistant Professor in the University of California, Southern Branch, has been appointed Assistant Professor of Philosophy in Stanford University from October, 1927.

Harold A. Larrabee, Assistant Professor at Union College, Schenectady, New York, has been made Associate Professor of Philosophy, and Mr. Philip E. Stanley has been appointed Instructor in Philosophy at the same institution.

THE JOURNAL OF PHILOSOPHY

There is no similar journal in the field of scientific philosophy. It is issued fortnightly and permits the quick publication of short contributions, prompt reviews, and timely discussions. The contents of the last six issues are as follows:

Volume XXIV. No. 9. April 28, 1927.

Our Knowledge of Other Minds. W. W. SPENCER.

What is the Correct Interpretation of Critical Realism? ROY WOOD SELLARS.

Book Reviews. Journals and New Books. Notes and News.

Volume XXIV. No. 10. May 12, 1927.

The Concept of the Symbol (I). CHARLES W. MORRIS.

The Short-Circuiting of Conscious Responses. KNIGHT DUNLAP.

Book Reviews. Journals and New Books. Notes and News.

Volume XXIV. No. 11. May 26, 1927.

The Concept of the Symbol (II). CHARLES W. MORRIS.

The Twenty-eighth Annual Meeting of the Western Division of the American Philosophical Association. A. CORNELIUS BENJAMIN.

Book Reviews. Journals and New Books. Notes and News.

Volume XXIV. No. 12. June 9, 1927.

Also the Emergence of Matter. ALFRED H. LLOYD.

Book Reviews. Journals and New Books. Notes and News.

Volume XXIV. No. 13. June 23, 1927.

Rignano's Hypothesis of a Vital Energy and the Prerequisites of a Sound Theory of Life. F. S. C. NORTHROP.

Book Reviews. Journals and New Books. Notes and News.

Volume XXIV. No. 14. July 7, 1927.

The Milesian Background of our Scientific Ontology. HAROLD CHAPMAN BROWN.

A Phenomenological Interpretation of Physico-Chemical Configurations and Conscious Structures (I). OLIVER L. REISER.

Book Reviews. Journals and New Books. Notes and News.

THE JOURNAL OF PHILOSOPHY

515 W. 116th St., New York City

$4.00 per annum (26 numbers) **20 cents per copy**

An International Classified Bibliography of Character and Personality
(including temperament)

Compiled by Dr. A. A. Roback

In reply to the numerous inquiries which have come to the Harvard University Press, we beg to announce that although the presswork has been delayed for some time, the volume will appear by September 15.

1. This work is international in scope, containing references to books and articles in a dozen languages, alphabetically arranged according to author.
2. Nearly all the references are supplied with a symbol or key, indicating the character or viewpoint of the publication.
3. The bibliography contains very few entries of questionable relevance.
4. There are scores of annotations in the body of the work.
5. Attention is called to the following features:
   - (a) The most important books and articles are starred.
   - (b) A list of unpublished writings and work on character still in preparation.
   - (c) Periodicals devoted to the study of character and personality.
   - (d) A list of organizations interested in these subjects.
   - (e) Some 300 up-to-date addenda.
   - (f) Classification according to point of view or approach.
   - (g) A chronological table of characterology from antiquity up to 1927.

In all more than 3000 items are included.

The subscription price of this book is $3.75 plus 15 cents postage. After September 15, the regular price will be $4.25 plus postage, and will be automatically increased as the limited supply of books is reduced.

Only 350 copies are intended for the American market. As the book may be *out of print* in a short time, (the prohibitive cost of manufacture precluding the possibility of a second edition for years to come) it will be necessary for those interested in securing a copy either for themselves or the institution with which they are connected to forward their order promptly to

THE SCI-ART PUBLISHERS
HARVARD SQUARE,
Cambridge, Mass.

Orders will be taken also for Dr. Roback's other works:

The Psychology of Character	$5.00 plus postage (3 lbs.)
Problems of Personality (editor) (a symposium *de luxe*)	6.00 plus postage (3 lbs.)
Behaviorism and Psychology	2.85 plus postage (2 lbs.)
Interference of Will-Impulses (paper bound)	1.75 plus postage (1 lb.)
Psychology with Chapters on Character Analysis and Mental Measurement (paper bound)	1.00 plus postage (1 lb.)
Superior Adult Tests	
Scientific Ingenuity and Juristic Aptitude Tests	
Comprehension Tests	

THE SCI-ART PUBLISHERS
HARVARD SQUARE,
Cambridge, Mass.